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DECEMBER 1945

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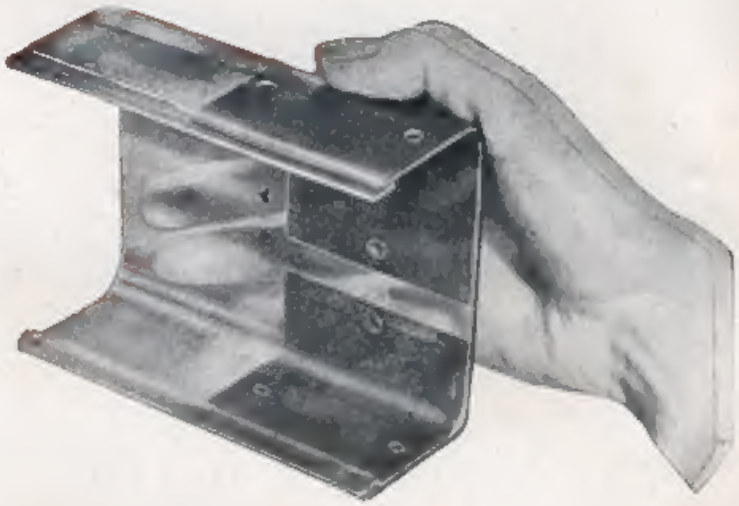

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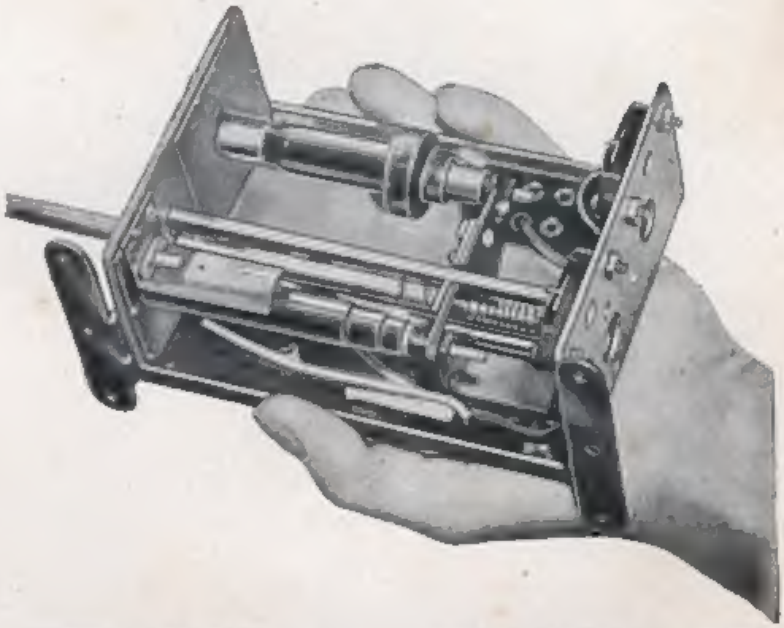

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Editorial

Experimental Radio—What does it mean to you?. Does it mean chasing DX, or simply ragchewing? Does it mean extensive experimentation and research in the field of radio transmission and receiving? Perhaps, in your case it means a combination of all—if it does you are truly an "Amateur"—for the definition of Amateur reads: "One who cultivates a particular study or art for the love of it."

The love of radio goes further—it induces a feeling of friendship with fellow amateurs and consequently a desire to co-operate—a factor which has done much to advance the science of radio and which would be a dominating factor in the propagation of International Peace.

It is the Hams proud boast that he co-operates with his fellows—yet—looking through the file marked "Amateur Radio Technical Copy" reveals a lamentable position. There is no dodging the fact that repeated appeals for contributions from readers have met with disappointingly poor response.

Just why this is so is hard to understand. Surely the work put into the production of "Amateur Radio" by the Magazine Committee, and the confidence shown in the magazine by our advertisers is worthy of better support.

THE MAGAZINE COMMITTEE DESIRES TO EXTEND TO READERS AND ADVERTISERS GREETINGS IN KEEPING WITH THE FESTIVE SEASON.

IN THIS ISSUE

The Amateur's Workshop

By J. K. RIDGWAY*

WITH the resumption of Amateur activities after six years of inactivity, most Hams will be busily engaged in their rebuilding programme.

Although much of the pleasure of Ham radio is to be derived from Operating, Rag-chewing, DX chasing, etc., there is also a certain pleasure and satisfaction to be derived from the construction of equipment of high quality, both from an electrical and mechanical standpoint. This article is designed to assist the Ham to obtain the best results from his tools. So lets take a little time off from operating and spend a little more time on constructional work. Later, if the demand is sufficient, we may give an article on the care and operation of a lathe, so if you are interested, please let us know.

The most common operation that is performed by the amateur is that of drilling. If the financial position will allow, a drill press is probably the most useful piece of machinery for inclusion in the workshop. During the war many scores of thousands of these machines were made in Australia, and now that the essential works programme is completed it should not be difficult to obtain one for a reasonable figure. Most of these machines have speed ranges of from about 300 R/P/M to 3000 R/P/M/. A ½ horsepower motor is usually fitted. By far the most satisfactory type of drill chuck is the "Jacobs" which is supplied with a key for tightening purposes. Although the initial outlay upon a drill press may be rather high it will be amply repaid over a period if the Ham does any large amount of constructional work.

Some hints on the care and operation of drill presses might prove of value at this juncture. A drill press should be regarded as a precision machine tool, and should be treated as such. A little care spent in regular cleaning and lubricating will be amply repaid in efficient working.

Most machines come equipped with ½ inch capacity drill chucks, but no attempt should ever be made to use drills of this size without first drilling a pilot hole of at least ¼ inch diam. If any degree of accuracy is required in the positioning of a hole a centre drill should be used for starting. This little gadget is more correctly known as a combined drill and countersink. The countersink is at 60 degrees and is usually used for preparing work for lathe centres. It is the point however that is of interest in starting holes. The lip angle is the same as an ordinary drill, but the flutes are more like a router bit and allow the drill to be pushed sideways in the work. Anyone who has vainly tried to persuade an ordinary drill to edge over a little will appreciate what this means. It is always advisable to clamp work down onto the drill table, especially where large holes have to be drilled. "G" clamps are very useful for this but other clamping arrangements can be worked out to suit the particular job being drilled. Remember, it is easier to spend a few seconds in clamping a job correctly than to run the risk of having it pulled out of your hand by the drill, which usually results in the operator losing the bark off his knuckles, as well has having a broken drill left on his hands into the bargain. Special care is needed when drilling brass, especially if the brass is of the extruded variety. Brass has a nasty habit of seizing on the drill when on the point of breaking through. Usually straight fluted drills are used on this work, but an ordinary twist drill can be made quite safe by simply grinding a slightly negative rake on the cutting edge as shown in fig. 1c. Drilling speeds are important and should be watched carefully if good results are to be had and long life to be obtained from the drills. Steel panels can be drilled with holes of up to 3/16 inch diam. at speeds of about 1500 R/P/M. Above this size it is advisable to drop down one step on the cone pulley drive, whilst holes of the order of ¼ inch should be drilled with the slowest speed available.

Aluminium can be worked at higher speeds than can steel, provided that the drill is sharp, whilst brass can be drilled at still higher speeds **PROVIDED THAT THE PRECAUTIONS PREVIOUSLY MENTIONED ARE OBSERVED.** Polystyrene, Lucite, Perspex and similar insulating materials drill easily except for their notorious susceptibility to heat. The speed for these materials can be as high as possible up to the point where heating results. When drilling a transparent piece of this type of material you can see the side wall of the hole turn white if the point heats up. This is the danger point. Incidently, don't be two heavy with the centre punch on these materials or they are liable to develop cracks.

Lubrication of the drill point is desirable for all drilling work if good results are desired. For steel, commercial cutting compounds, usually vegetable oils, soluble in water are ideal, but are not readily available to the Ham. However, a light machine oil will do very nicely. Aluminium benefits from the application of kerosene during drilling, whilst the plastic materials should be lubricated with a strong solution of soap and water.

SELECTION OF DRILLS.

It is advisable to carry a selection of fractional size drills ranging from 1/16 inch to ½ inch in steps of at least 1/32 inch. As well as these it is frequently desirable to have a range of number and letter size drills. These drills come in sizes in between the fractional sizes, and are useful for drilling tapping and clearance holes. A table of drill sizes is given at the end of the article. High speed steel drills are a good investment and will outlast the cheaper carbon steel drills many times, especially when used in a high speed drill press. Always see that drills are held tightly in the drill chuck. Nothing contributes more to the inaccuracy of a drill chuck than drills which slip around under load, thus tearing both the chuck jaws and the shank of the drill. Sharpening of drills is important and will be dealt with at large later on.

Next in usefulness to the drill press is probably the bench grinder. Anyone who has ever tried to sharpen drills and chisels on a hand operated machine will realise the truth of this statement. A satisfactory type suitable for the amateur's workshop would be a double ended machine using 6 or 7 by ½ inch wheels. One-third horsepower is ample for a machine of this size. In order to maintain a satisfactory surface speed for the wheels 3000 R/P/M/ is desirable.

Grinding wheels for these machines come in a wide variety of grits and grades. The type of wheel is designated by the code lettering on the label. The grit, which of course refers to the coarseness of grain is indicated by the numerals; whilst the following letter or letters refer to the grade or hardness of the wheel. For instance, a 46 wheel would indicate that the particles of abrasive had passed through a screen of 46 mesh. The most satisfactory wheel for general use is one of average hardness, i.e., one which carries one of the following code letters: J, K, L, or M. Paradoxical as it may sound, a hard grade of wheel is used for grinding soft material, whilst a soft wheel is desirable for the grinding of hard

* Technical Editor "Amateur Radio."

materials. The most satisfactory wheel for general purpose use is a 46K. If two wheels are used a 30K and a 60K are recommended. Before mounting a grinding wheel, always test it for cracks. Do this by holding the wheel loosely on a screwdriver or any convenient object that will pass through the mounting hole and giving the wheel a light tap with a small metal object. A good wheel should ring in the same manner as a china cup; a cracked wheel will have a dead sound and should not under any circumstances be used. Always see that the blotters provided on either side of the wheel are used between the wheel and the mounting flanges on the spindle. These are provided for the express purpose of preventing too much pressure being exerted by the flanges of the wheel, which might cause a fracture of the wheel structure. Remember, a wheel rotating at 3000 R/P/M., if it breaks, is quite capable of causing serious, if not fatal injuries.

Grinding wheels should be kept in free cutting condition by frequent dressing. Small industrial diamonds are ideal for this purpose, and one of fractional carat size may be purchased quite cheaply.

Drill	Diameter	Drill	Diameter	Drill	Diameter
1	.2280	18	.1695	7/64	.1002
2	.2210	19	.1660	36	.1065
7/32	.2187	20	.1610	37	.1040
3	.2130	21	.1590	38	.1015
4	.2090	22	.1570	39	.0995
5	.2055	5/32	.1562	40	.0980
6	.2040	23	.1540	41	.0960
13/64	.2027	24	.1520	42	.0935
7	.2010	25	.1495	3/32	.0937
8	.1990	26	.1470	43	.0890
9	.1960	27	.1440	44	.0860
10	.1935	9/64	.1406	45	.0820
11	.1910	28	.1405	46	.0810
12	.1890	29	.1360	47	.0785
3/16	.1875	30	.1285	5/64	.0780
13	.1850	1/8	.1250	48	.0760
14	.1820	31	.1200	49	.0730
15	.1800	32	.1160	50	.0700
16	.1770	33	.1130	51	.0670
17	.1730	34	.1110	52	.0635
11/64	.1716	35	.1100	1/16	.0625

FILES.

A file is one of the most useful tools around a Ham workshop, and without doubt one of the most difficult to use correctly. Good files are cheap, so there is no necessity to buy inferior ones. Files are sold in various lengths from 4 inches to 14 inches and in various shapes. The cut of a file denotes the coarseness of the teeth. These cuts are defined, starting with the coarse end as: Rough; Bastard; Second cut; Smooth; Dead smooth; and Dead dead smooth. The most useful files for Ham use would be a selection of shapes, sizes and cuts as follows: 8 or 10 inch Flat, Half round, Round, Square and Three cornered in the following cuts: Bastard, Second cut and Smooth. New files should be reserved for use on brass and copper, then when they are too dull to cut these materials they should be transferred to steel and aluminium. A file that has been used on steel will be next to useless on brass. Aluminium has a nasty habit of clogging the file teeth, and files used on this material will benefit from being rubbed over with chalk. This will slow down the cutting action somewhat but will prevent the clogging. Always clean a file after use with a stiff wire file brush to remove any particles that may be lodged in the teeth. Filings which are firmly lodged can be removed with a piece of tin or brass. A file is probably the most widely used and the most consistently abused tool in the workshop, and a little care with it will work wonders.

SCREWDRIVERS.

Screwdrivers as purchased from the dealer are capable of doing more harm than enough to the head of a screw. It will be noticed that a new screwdriver has the point ground at an angle. This usually results in the blade slipping out of the screw slot if any great pressure is exerted, and nothing looks worse than a panel covered with screw heads with torn slots. It is the writer's practice, upon the aquisition of a new screwdriver to grind the end of the blade parallel for a distance of ¼ inch. A screwdriver treated in this fashion will never be guilty of damaging a screw slot, provided, of course, that it is a reasonably good fit in the slot. Screwdrivers are made from tough material, usually a nickel, chromium or vanadium steel, tempered to a high degree of hardness, and should never be allowed to show colour when being ground on a wheel.

TAPS.

Taps are extremely useful things to have around a Ham's workshop. The most likely sizes to have are 1/8, 5/32, and 3/16 Whitworth. In addition, B.A. (British Association) threads are often encountered in radio and electrical work. The most common B.A. threads in use are 2B.A., 4B.A., and 6B.A. Tables of drilling and tapping sizes are given at the end of the article. A small "T" type tap wrench is very useful and should always hold the tap firmly; a tap with a rounded end due to badly fitting wrenches is worse than useless. Taps come in three varieties, taper, intermediate and plug, although for amateur work, which rarely consists if tapping anything heavier than 14 gauge sheet metal, the intermediate type would be satisfactory, with possibly a plug thrown in for those deep blind holes which require a thread right down to the bottom. Never force a tap; if the tap is not cutting freely something is wrong, either the tapping hole is too small or else the tap is blunt. A tap should be withdrawn slightly every half turn or so to allow the chips to clear the flutes. Lubricants for tapping are the same as given under drilling. Sharpening a blunt tap is a job best left to an expert, and is usually done on a special attachment. A fair job can be done by hand however if certain precautions are taken. The main precaution is to see that sufficient clearance is allowed between the cutting edge and the back edge of the tooth. In other words, the cutting or front edge should be slightly higher than the back edge. A similar amount should be ground off each edge if the tap is to cut evenly.

Screw size	Tapping Drill	Clearance drill
1/8 Whit.	No. 41	No. 30
5/32 Whit.	No. 30	No. 22
3/16 Whit.	9/64	No. 12
2 B.A.	No. 25–26	No. 10–11
4 B.A.	No. 33–34	No. 26–27
6 B.A.	No. 44	No. 32–33

SHARPENING DRILLS.

A drill is a difficult tool to sharpen without the attachments, but a fairly satisfactory job can be done by hand provided that a little care is taken. Referring to the sketches in Fig 1 a and b, there are three angles to be taken care of in sharpening a drill, one the cutting angle or the angle of the point which is 59 degrees, two, the clearance angle or rake which is about 4 or 5 degrees, and the third which is the angle "X" shown in Fig. 1A, and is obtained automatically by the correct grinding of the other two angles. Hold the drill against the side of the wheel as shown in Fig 1b with the left hand near the point and holding the shank of the drill between the thumb and forefinger of the right hand. Bring the cutting edge of the drill into contact with the wheel and rotate the drill for about a quarter of a turn, taking

care that the other cutting edge does not come in contact with the wheel, at the same time dropping the right hand slightly to give the clearance angle of 4 or 5 degrees. Then having done this repeat the operation on the other cutting edge of the drill. A little practice along these lines will soon enable the correct action to be achieved. Looking at the point of the drill, the centre of the line "X" must coincide with the centre of the drill. Care should be taken to see that the amount is taken off each side of the drill and that both cutting edges are of equal length. Unless this is so, the drill will cut oversize and will be very hard to centre. Never allow the point of a drill to become overheated and discoloured whilst grinding as this will draw the temper and soften the point.

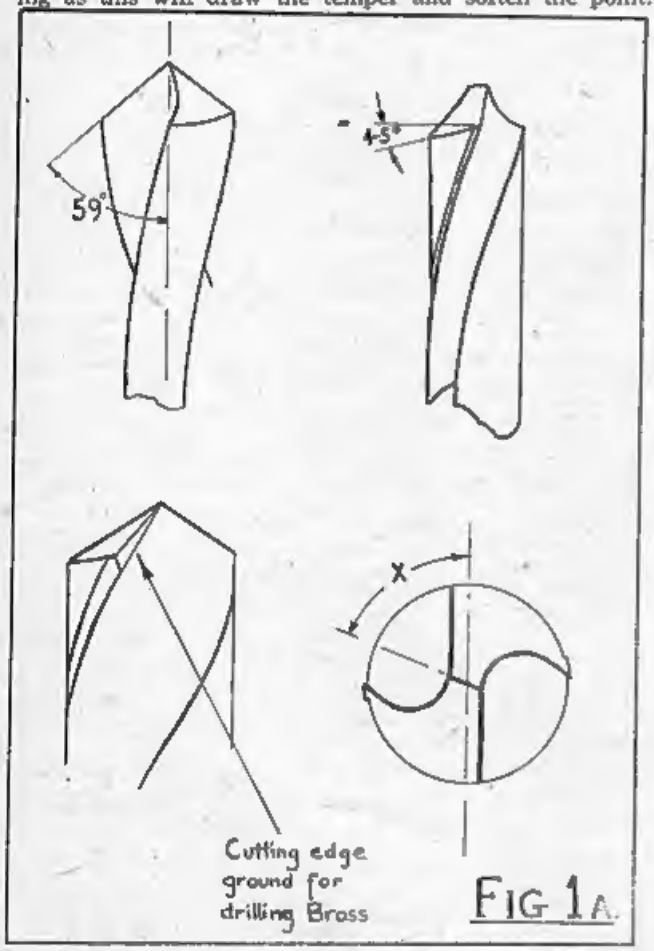


FIG 1A.

HOME MADE TOOLS.

It is sometimes necessary to make special purpose tools for specific purposes. The most useful material for such use is "Silver Steel." Silver steel is a high grade carbon steel which does not as the name implies contain silver, that title having been bestowed upon it because of the high polish imparted to the finished bar which is ground to an accuracy of within .0005 inch. Silver steel is supplied in all standard sizes from less than 1/16 inch diam. to 1 inch diameter, and can be obtained quite cheaply from any merchant dealing in high quality steels. As supplied, silver steel is quite soft and is able to be sawn, filed and turned readily without trouble. The hardening process for silver steel is very simple. Simply heat the tool to a bright cherry red and plunge it in clear, cold water. This treatment, known as the preliminary hardening, leaves the steel in its hardest possible condition, far too brittle to be of any use at all. To make it useable it is necessary to "draw the temper." Now to what extent the temper is to be drawn will depend upon to what use the tool is to be put. A table showing the relationship between hardness and colour is given. To temper a tool that has first been preliminary hardened, clean off the scale from around the hardened portion with a piece of fine emery cloth, bringing the steel up to a polish. Then hold the tool in the flame (preferably from a gas torch or bunsen burner) with the flame a short distance away from the part that it is desired to temper. Allow the tool to remain in the flame until it becomes blue. At this stage the hardened portion should not be affected.

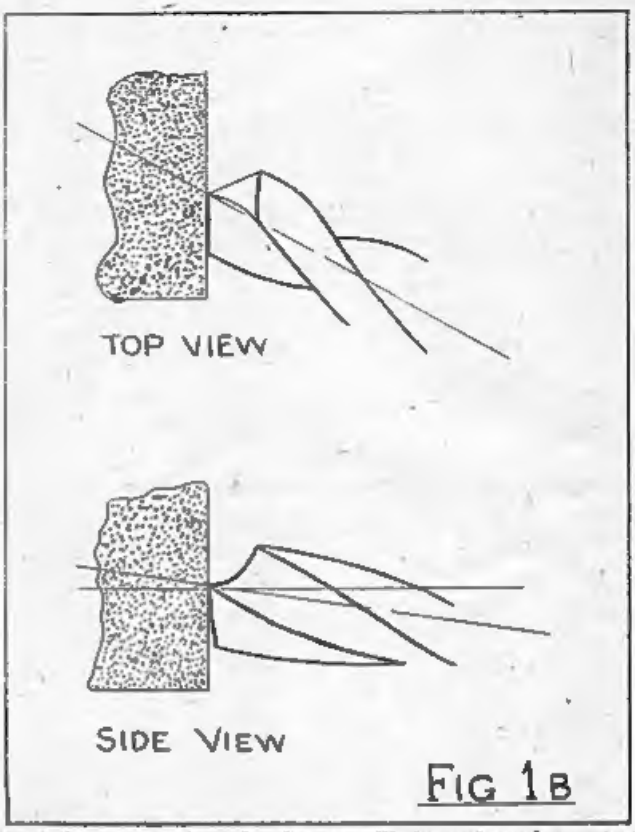


FIG 1B

Hardness	Colour	Application
Very hard	Cherry red	Preliminary hardening
Hard	Pale straw	Hammer faces
	Light straw Medium straw	Machine tools
	Dark straw	Taps and Dies
Elastic	Brown-yellow	Reamers and Punches
	Yellow-Purple	Plane Irons—Metal Drills
	Light purple	Wood drills
	Dark purple	Cold chisels
	Dark blue	Springs—Screwdrivers Wood chisels
Soft	Pale Blue	Too soft for any practical purposes.

(Continued on page 9)

Theory and Practice

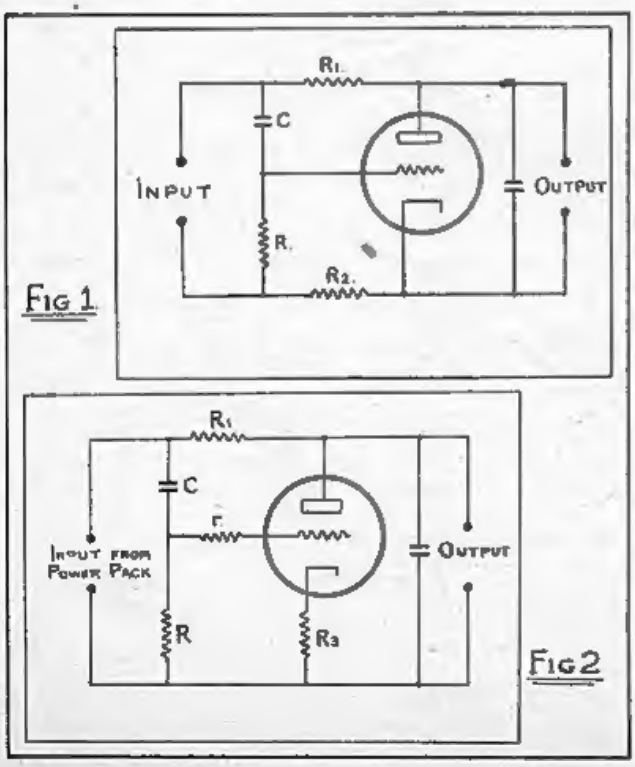
VOLTAGE REGULATION AND RIPPLE SUPPRESSION.

The voltage of A.C. mains is constantly varying by small amounts, and with considerable rapidity, due to the varying load conditions. These changes find their way to the output side of a power pack. It is interesting to connect a power pack through a blocking condenser and amplifier to a cathode ray tube; if the amplifier has a reasonable performance down to 10 c/s or less, the output voltage will be seen to be subject to violent and random variations. It would be a bad case where the variations exceeded a fraction of a volt, but they can be a greater nuisance than slow variations of a larger amount.

There are several well-known stabilising circuits, all of which are characterised by features which have disadvantages from the point of view of expense. The output current has in many cases to be passed by a large valve, or by a battery of valves in parallel; or gas discharge stabilising tubes are needed; or the load is paralleled by a large valve so that the total current always equals the full-load rating.

The circuits to be described removes almost the last trace of ripple from the output of a power pack. At the same time it removes all but the slowest of those variations due to mains voltage fluctuation.

The components required are standard type, easily procurable. In essence the arrangement consists of a normal power-pack, with ordinary smoothing designed to reduce the ripple to a valve well within the capacity of an ordinary triode. This triode has a low anode circuit resistance, and acts as an amplifier, giving phase reversal but neither loss nor gain. By this means the normal ripple is neutralised. Simultaneously, if the time constant of the grid circuit of the triode is large, relatively slow variations superimposed on the ripple are also neutralised.



Analysis shows that, in fig. 1 RI equals I/gm where gm is the mutual conductance of the valve. R2 must have a value designed to give a suitable grid bias, and this value clearly depends on the fixed load current. C should have very low leakage ,and should be as large os possible, say up to 2 microfarads; R should be 1 megohm. A large condenser or a further decoupling circuit is essential across the output terminals, to lower the impedance presented to voltages arising in the load. For an MH4 type valve which is a medium Mu general purpose triode, R1 should be about 300 ohms, and for the best results the final adjustment of value should be made with the aid of a cathode ray oscilloscope. Due to the presence of R1 the voltage regulation is made worse by about 1 volt for every 3 mA in the load.

Fig. 2 shows a modification suitable for, say a laboratory power-pack which may be used on various fixed loads without further adjustment. The performance is independent of the load, but this is at the expense of voltage regulation. R1 should now have a value of 1/gm plus 83 (1 plus 1/u). Using an MH4, R3 can be 750 ohms, and R1 will have to be 1,070 ohms. But again, for best results, adjustment should be made by the use of a cathode ray oscilloscope. The resistance (R) is included to limit grid current when the load is suddenly increased; it can be 50,000 ohms. The voltage regulation is made worse by about 1 volt for every mA in the load.

In both these circuits there is little objection in using output voltages up to 350. The MH4 is not likely to be damaged so long as the anode dissipation is kept below 2.5 watts, because the anode voltage variation is small.

Examples built to these circuits have shown a residual ripple or not more than millivolt in 300 volts. Moreover the random instability of output voltage has completely disappeared.

The chief application has been the supply of oscillators. In this case the oscillator portion of the instrument is connected to the semi-stabilised output, whilst the anode circuit, grid circuit, and cathode circuit of the power stage are connected to the unstabilised power-pack direct; the chassis and case are also, for safety, connected to the negative end of the power supply, and to one output terminal.

MODULATION RELATIONSHIPS.

By R. B. DRANSFIELD, VK2ALD

With the close return of Amateur radio to the air, there is bound to be a large number of VK's who are nutting out the new rig. This may present some snags with the shortage of various valve types, so here are some easy methods of calculating modulation relationships.

In the first place there seems to be a lot of misunderstanding about the various values given, and formulae which include the calculation of a dropping resistor with "Heising" modulation. With the shortage of valves at the present time there seems likely to be a swing in favour of Class A modulation for low power transmitters. So here are some of the answers:—

Everyone knows that for 100% modulation the modulator must have an undistorted output of one half the D.C. power input to the final R.F. Amplifier. So this will be our starting point. A popular valve will be the 6L6G of the 807 which will give 6.5 watts output (audio)

(Continued on page 9)

IN REVIEW

TECHNICAL BOOKS - - - - - - - RECORDINGS - - - - - - - - - - - - - PRODUCTS

RECORDINGS—NOVEMBER—DECEMBER RELEASES.

The November-December release has brought us an up-to-date recording of ELGAR'S SYMPHONY No. 2 IN E FLAT OP. 63, played by the B.B.C. Symphony Orchestra conducted by Sir Adrian Boult. H.M.V. ED. 344/9.

This recording will be warmly welcomed by many Elgar devotees, who earlier in the year had the opportunity of hearing the work performed here in Melbourne by the A.B.C. Symphony Orchestra conducted by Dr. Malcolm Sargent.

Another new recording is that of the late George Gershwin's most ambitious and successful CONCERTO IN F FOR PIANO AND ORCHESTRA, played by Oscar Levant with the New York Philharmonic Symphony Orchestra, conducted by Andre Kostelanetz. Col. LOX 575/8. These artists are to feature this work in a forthcoming Gershwin Film Biography.

Mantovani and Orchestra contribution this month is "THE LULLABY OF THE BELLS" PIANO CONCERTO from "The Phantom of the Opera" with Guy Fletcher solo pianist, whose playing is outstanding.

Among the popular songsters is Vera Lynn's recording of "White Christmas" (in time for this coming one), and "I'll be with you in apple blossom time." Also in time for Christmas, Bing Crosby sings two numbers "God Rest Ye Merry Gentlemen" and "Faith of Our Fathers," and is very ably assisted by mixed chorus and orchestra.

Some brilliant trombone playing by Tommy Dorsey with orchestra accompaniment is featured in the ever popular "Sleepy Lagoon" (Coates) with "Melody" (Dawes) on the reverse.

A first release in Australia has now arrived in the popular overseas hit, "ACCENT-TCHU-ATE THE POSITIVE," played by Jack Payne and his orchestra, and well sung by the Crackerjacks. The reverse side is the ever-popular "I Promise You," played in Beguine tempo.

Eric Winstone and his band feature a new popular hit, "I'm Gonna Build a Fence Around Texas," with Joe Loss and his Orchestra, on the reverse side playing "More and More," with Alan Kane doing the vocal.

Felix Mendelssohn's Hawaiian Serenaders introduce "BLUE BAHAMAS," another first recording in Australia. The arrangement here is very good and shows up well on the instruments available to this combination, particular emphasis being given to the electric guitar of Harr Brooker. Backing this up is an old favourite "LA ROSITA."

The Catford Salvation Army Choristers, with Band, sing "THE COVENTRY CAROL" and "THE HOLY GUEST." Christmas Carol.

Isbel Baillie, soprano, with the Liverpool Philharmonic Orchestra, conducted by Dr. Malcolm Sargent, sings an aria from Handel's "Messiah," "REJOICE GREATLY, O DAUGHTER OF ZION," and "IF GOD BE FOR US, WHO CAN BE AGAINST US."

The Blue Hungarian Band, a very good combination, are represented with a Schubert Medley, introducing "MOMENT MUSICAL," "SERENADE," "MARCHE MILITAIRE." On With the Medley introducing "GIPSY MOON," "MOONLIGHT MADONNA," "KISS ME." (Bitter Sweet).

There are records for the children by Anne Stephens, child star of "Alice in Wonderland," who sings "The Night Nursery," "The Sick Teddy Bear," and "Mummie's Song."

Uncle Mac (Derek McCulloch) tells the Grimm story of "Rumpelstiltskin. Charles Laughton, famous English stage actor, presents readings with musical background, appropriate to Christmas: MR. PICKWICK'S CHRISTMAS, THE OLDEST CHRISTMAS STORY and THE STORY OF THREE WISE MEN.

OUR FRONT COVER

AUSTRALIAN DESIGN OF COMMUNICATION RECEIVER.

In these days of widespread interest in general communications on the M.F. and H.F. ranges, the keen amateur may not be content with ownership only of a receiver confined to the amateur band-edge limits. Things are liable to happen in other portions of the spectrum, things which may be of particular interest to the amateur in indirect or even direct manner.

Before the late war, there were instances of expeditions—American in general, which relied upon amateur channels for certain classes of communication. QSO's were effected "cross-band", with the expeditions on "commercial" frequencies. A "communications" receiver is an asset for such occasions, and indeed, it is a handy thing to have around the shack. The pre-war overseas product of this type was such a pricy article that the average VK could only study ads. in U.S. magazines with envy. Few VK's got around to ownership.

An attractive answer for the man with a shallow pocket is now provided by the advent of the Philips R163 Communication Receiver pictured. This, a 7-valve superhet. for R/T, C.W. and M.C.W. has coverage from 550 kc/s to 22 Mc/s with direct reading of calibration and twin-speed tuning. Panel loudspeaker or headphone operation is provided, with speaker muting switch. Power supply can be from 110 to 220, 240 and 260 volts A.C. with alteration to any of these voltages by plug connector. Wave-change is switched in three overlapping ranges and other essential panel controls include combined tone and ON-OFF switch, twin headphone jack, A.V.C ON and OFF with standby position for transmitting use, B.F.O. ON-OFF switch, and B.F.O. note control. Valve line-up is conventional, an important point for future replacements, and the types used are RF—6U7G, FC—6J8G, I.F.—6U7G, Det.—6B6G, AF—6V6G, BFO—6U7G. Rect.—5Y3G.

Structural design is robust, and the entire chassis is readily removable from the outer cover by releasing the spring loaded panel clips. In appearance, the job is unpretentious but very neat and clean, being finished in matt black with white outlined engraving. The accurately calibrated dial has a non-reflecting matt surface which permits quick reading at a glance. The full worth of this R163 shows up in the handling, which is of a delightfully simple nature. Sensitivity is high enough for any amateur need, being better than 1 microvolt over most of the tuning range and 5 microvolts at the 22 Mc/s end. Examination of the chassis shows a strong resemblance in design to the "Reception Set No. 4", as designed by Philips Engineers during the war for Australian Army Signals.

BOOKS

AN EXPERIMENTAL COURSE IN THE FUNDAMENTAL PRINCIPLES OF RADIO—R. H. Humphry

This is a book of the Physics Class Lab Manual type comprising a laboratory course designed for those who have little or no knowledge of electricity and magnetism. The fundamental principles of the subject are dealt with, and a statement of the theory underlying each experiment or group of experiments, is given in a concise form. Many of the experiments are of an elementary nature.

An interesting note from the preface: ". . . the difficulty of choosing valves from the very large number which appear in makers' catalogues has been resolved . . .

(Continued on page 9)

CORRESPONDENCE

Correspondents are requested to keep their letters short and to the point. The Editor reserves the right to delete anything he may think fit. The views expressed by correspondents are not necessarily those of the proprietors.

135 Parkway Avenue, Hamilton, N.S.W.

The Editor, "A.R."

Dear Sir,—In the N.S.W. Division notes appearing in the October issue of "A.R.," reference is made to the move at the September meeting to delay presentation of the Institute's plans for post-war regulations to the P.M.G.'s Department.

As the spokesman for that particular move, I think it necessary to make a few comments for the record and would be glad if you could do the honours in the November issue of "A.R."

Firstly, the Council's criticism of such a last minute move after ample invitation to co-operate, is completely justified. I can only offer the well-known failings of human nature by way of excuse. Nevertheless, whilst last minute criticism is distasteful, it must not preclude consideration of a constructive redraft. The majority of N.S.W. members present who voted for the stay of proceedings is evidence of the deep concern felt over some of the proposals.

There is nothing personal in my criticism. I have only respect and appreciation for the stalwarts who have kept the Institute functioning during the period of Amateur inactivity. I believe the draft would be very different had there been a more general appreciation of the evident need to change our point of view of Amateur Radio. The time has come, without doubt, to forsake the pleasant fiction that worthwhile experimental work is possible within the scope of facilities available in the ham shack. Recognition of the obvious would open the way to the acceptance of Amateur Radio as a scientific hobby offering peculiar and extremely valuable benefits to national security and international understanding by its existence. If that view is acceptable, then surely the liberalisation of the conditions under which we operate might well be the guiding influence in our approach to the problems of post-war licencing.

Nor will there ever be a time when Amateur Radio will be able to advance a better case for liberal treatment or be sure of a more sympathetic hearing than now, when the not inconsiderable contribution of the amateurs to Australia's defence in all branches of the services and throughout the radio and signals industries is fresh in mind. It is in the light of these facts that I considered the draft to be unrealistic and pessimistically narrow in its conception.

To deal briefly with the more obvious faults in the draft. Clause (a) of Part 1 is a matter for Government policy and for the W.I.A. to offer comment is presumption. There seems little reason for increasing the speed of the code test of Clause (c).

Part 2 is definitely dangerous and it is the considered opinion of many members of N.S.W. Division that the proposed three classes of licence is explosive and must ultimately split the W.I.A. The draft provisions are unduly restrictive, particularly in view of the age qualifications. In the case of a man taking out a "C" licence at age 16, it is ridiculous to suggest that he wait five years before being eligible for a class "A" licence regardless of his ability.

The reference to commercial certificates means by inference that a man may be fully qualified to earn his living in commercial radio, perhaps carrying the responsibility for lives and property at sea, yet be not considered competent to operate amateur radio. Such a provision is fantastic. The suggested rule that twelve months operation must be put in on each grade of licence may well mean that a laboratory worker or commercial design engineer thinking to enter amateur radio may be so frustrated by these years of unnecessary probation as to give the idea away and amateur radio will lose the interest and support of individuals we need to strenthen our ranks technically.

The power limits of Clause 3 (c) are too stringent when one considers the range of low cost, low voltage, high power tubes readily available and the increasing ease with which one may purchase high voltage power supply, etc. Any fear that a power race would set in from which some amateurs would be barred on economic grounds does not arise, and 250 watt is the logical step above 50.

The higher technical qualifications suggested offer little worthwhile safeguard for as much BCL QRM can be caused by 50 watts badly handled as by 250, and there must be other and better ways of dealing with the irresponsibles than by penalising all concerned.

Part 3 (e) represents a harmless piece of self-deception entirely in keeping with the thoughts behind Part 2. The inference, however, will do little to create good public relations for Amateur Radio amongst commercial men.

Parts 4 and 5 are illogical instrusions into proposals dealing with licencing conditions, Part 4 being more suitable for negotiations between the Institute and the P.M.G.'s Dept., after licencing conditions have been settled whilst Part 5 seeks to impose on the Department a duty for which no responsibility could be accepted and which, indeed, falls within the province of the Institute itself.

In conclusion, Mr. Editor, in offering these comments, I am concerned only in promoting a more realistic appreciation of Amateur Radio and a more liberal and constructive approach to our post-war state. Nevertheless, I am prepared to be misunderstood and criticised for the benefit of the grand old game.

But let us remember that no matter how sympathetic may be the Department towards amateur radio, and I believe we have good friends there, no department administering regulations will give us more than we ask for. Why must we always pessimistically feel that in placing a reasonable assessment on our own value to the community our representations will not be given the liberal treatment they deserve?

If this country's future is to be secured it will only be as each one of us will visualise broader horizons be it in industry, politics, amateur radio or any other sphere of interest in which Australia meets the rest of the world. —Yours, etc., ALLEN FAIRHALL, VK2KB.

P.S.—Divisional circular is now to hand advising that Part 2 should read that holders of commercial tickets "may be exempted from further examination." We might, with grace and profit, have deleted the entire reference. The error has thus been corrected at this late stage by Divisional consultation after the virtual rejection of the N.S.W. Division's instruction to its Council at the September meeting and after the date upon which we were led to believe the submission had already been made to the Department.

This is the best possible justification for the contention that the draft plan should have received further detailed consideration before presentation.—A.F.

H.M.A.S. Mildura, c/o G.P.O.

Editor "A.R."

To-day I received October isue of "A.R." and I think it FB, excellent, and any other adjective you care to add. The people responsible are to be congratulated on their effort, and I hope that all Divisions and individual Hams give their support—in a big way.

The editor and his minions could point out to all members that one way to support the Mag. is to write most anything and let the Editor be the judge of its value.

There's just one suggestion I'd like to make in regard to the Mag. Let's have an "Open Forum" "Rag Chew" column. Call it what you like, but let's have space in the Mag where anyone can put his views on the air. . . " —Yours, etc., JACK COULTER, VK3MV.

THE AMATEUR'S WORKSHOP.
(Continued from page 4).

Then remove the tool and allow the heat to creep along to the hardened portion. When this reaches the desired colour (as shown in the table) plunge the tool once more into the water. The tool is now ready for use. Small flat tools can easily be forged from silver steel, but the forging temperature should be kept below the hardening temperature (preferably a dull cherry red) or the steel is likely to be harmed. Silver steel, being of high carbon content burns readily if heated above a medium yellow, so take care that this temperature is never exceeded.

MODULATION RELATIONSHIPS.
(Continued from page 5).

with 300 volts on the plate. This will modulate a final amplifier of 13 watts.

Now for 100% modulation the PEAK AUDIO voltage must be equal to the D.C. VOLTAGE of the final. How can we get at this? The load for a 6L6 or 807 at 300 volts is 4500 ohms. So—

$$\sqrt{6.5 \text{ watts} \times 4500 \text{ ohms}} = 171 \text{ R.M.S. volts.}$$

But we said that for 100% modulation we must have a PEAK voltage equal to the D.C. VOLTAGE of the final. So to find what this is we must multiply the R.M.S. value by 1.414—like this:—

$$171 \times 1.414 = 242 \text{ volts (peak)}$$

However this is still 58 volts below the 300, so we can either drop the voltage to the final (which seems a waste) or step up the peak voltage with a transformer.

The turns radio of the transformer is $\frac{300}{242}$

which is approximately 1.244 to 1.

Now if you want to check this just multiply 242 by 1.244 and the answer is 301 volts: Easy isn't it?

If you want to know what to load the final to, to arrive at the right load restistance, just divide your final wattage (13) by the voltage (300) which will equal 43 mills.

If you want to check again by the old method, divide the final plate voltage 300 by 43 (mills) and the answer will be 6976 ohms.

The turns radio will be the square root of this figure divided by the proper load value for the modulator:—like this:—

$$\sqrt{\frac{6976}{4500}} = \sqrt{1.55} = 1.244$$

BOOKS.—(Continued from page 5)

fundamental principles can be illustrated without resorting to a large and confusing variety of valves." (Loud applause!).

The range of subjects covered is from simple DC circuits to elementary transmitter circuits.

A book of more interest to the Technical College Student or Radio beginner than to the mature Amateur.

AN EXPERIMENTAL COURSE IN THE FUNDAMENTAL PRINCIPLES OF RADIO.—R. H. Humphry. (Sir Isaac Pitman & Sons Ltd., London, 1945) 194 pages, 5 x 7 and index, 122 diagrams, cloth bound—18/9. Copy by courtesy Technical Book and Magazine Co., Melbourne.

HAMS ON SERVICE

Well, December—just think of next December, 1946—DX galore, QRM aplenty, phone versus CW arguments, little dull Hams with "B" (below normal) licences and Dons with "A" Class licences—all "hamming", and, we hope, all thoughts of these years of inactivity forgotten. Anyway that's the outlook—next December will provide the answer—"yeah" sez a Ham in the Islands, we'll be right here, Buddy, at the rate of present progress. hi!"

One reads of these chaps who dodge all kinds of service dangers and then meet with disaster as soon as they come home—well, our ex-Fed. President, Fl/Lt. Bill Moore, 2HZ, is among those kind of chapples. He comes home safely after years of POW in Batavia, and is now in hospital at Jervis Bay, with a factured ankle. It was suggested to me that the poor old ankle wasn't used to carrying the two and a half extra stone Bill suddenly put on as soon as he arrived home, Hi! Anyway it's Bill for hospital for six weeks, and he doesn't seem to like it much. With luck, he will just be out to go on the air—with the "BN's", Bill?

It is with regret we learn that Charlie Roberts, VK2 JV, died in Malaya, while POW. 2JV was attached to the same unit as Tom Slawson, 2AFN, and also a cousin of 2YC's. Chas. was a true Ham in spirit, always ready to rally to the Ham game and we found his legal aid very valuable and always freely offered, during the formation of the A.R.A. in VK2, and later on when taking over the "lost" W.I.A. (N.S.W. Div.). To his people, all his Ham pals offer their sincere sympathy in the loss of their son.

Some of you read the R.S.G.B. Bulletin, but many of you who do not do so heard and worked G2ZQ in most Contests, particularly the RSGB Test. Wing-Commander Johnny Hunter, 2ZQ, died in Ceylon last December from an attack of pneumonia, and with his passing England loses a very fine officer, and the RSGB one of their leading Hams. As the "Bull" says, "he possessed an uncanny sixth sense for extracting practically inaudible signals from the QRM on our bands and for making them into intelligle contacts." VK2NR (now 2AJX) vouches for this. Jack was pretty "hot" himself, but he says he sat with phones attached to the same rx while G2ZQ conducted a QSA5 QSO, that Jack couldn't hear a sound of, Hi! Many Hams all over the world add their condolences to his wife and two little children

Fl/Lt. Ray Carter, 2HC, rang up after his (he hoped) pre-discharge leave Ray was on the way back to Brisbane where he expected to sever connections with the R.A.A.F.. When things ended up, Ray was on a trip to Moratai. He says that the clearing depot at Madang is just one big collection of Hams. What Ray did I don't know. I really think he was afraid my journalistic instincts for Slouch Hats and Forage Caps would have overcome my discretion. Well, well! What a pity if our column missed a scoop. Didn't you know Freddy always censored my column and had me scared to death—till peace was declared. Hi.

Fl/Sgt. Jim Edwards, VK2AKE, is another POW reported in Australia Jim was in Italy first and then in Germany and ended up as he put it "a bit weak on it," and so is having three weeks rest at Jervis Bay. While in England he was guest of Clarry 6CL and the RSGB, and with luck, Jim you might strike Bill Moore where you are now, Hi! I think Jim's arrival makes all the European Ham POW's safely home. How about some notes about what happened after you left Italy, Jim. 2YC.

Lt. Joe Ackerman writes from Sch of Sigs, New Guinea and has so far given up all hope of reaching VK2 again, that he wants the dope on how to get a New Guinea call. Just before hostilities ended, Joe was mixed up in a mass of appointments and recalls that kept him dashing up the VK coast from VK2 to VK4, then to VK6, then VK9, with a trip to the Solomons in the air, and then once more back to New Guinea—and peace, or did you say stagnation, Joe, Hi! Well, in passing, om, I may add for everybody's benefit that it was whispered to me that if we did get any bands it would be for Commonwealth use only—should this be the case, I hope you "holidaying" hams will use your VK "portable" calls, Hi! Gee, I hope, Freddie has let his sub to "A.R." run out!

Who said all we prewar Hams aren't getting into the "old chap's" class. The other week I received a letter from Sgt. Jim Todd, who is yet another one of those who passed the AOCP but were not allotted calls. Jim is the son of one of VK2's very active old-timers, VK2CR, of Tamworth, now using the call 2LS, as an ABC station Just happened to take a fancy to his first call. 2LS works with the RI's office in VK2, so I guess Jim's P. A. Tranny will have to be according to Regulations. Sgt. Todd was one of the Bonegilla group of Hams for the past few years, but they all seem to be split up now and Jim is enjoying the hospitality of VK6. With a bit of luck he hopes to start off his Ham activities with a VK6 call.

Ldg. Tel. George Benwell, otherwise VK3KQ, is on the H.M.A.S. Bowen, one of the flotilla stationed at Moratai. With George on the ship is Bob Heath, of Albury, who is just waiting to get his call and add to the QRM of 2OJ and Co. They are keen collectors of Jap gear (for the ship!!!) and have had so much experience that they have even learnt to read the Japanese on the knobs. Hi

With the flotilla is Keith Hatch, a second op. from Malvern way, and Keith provides the Amateur Radio—sells 'em one each, om (2YC)—for the crowd. Jack Gore VK4HC (?) is on H.M.A.S. Platypus with Keith, while another VK4, L. Griffiths, 4LZ, of Toowoomba, is on the Junee, so it looks as if the Hams are well into the Navy too. Everyone of them say that any group of two discuss only two matters—when do we go south—and WHAT frequencies are we going to get?

A ham who shall be nameless (hi) wants to know have we gone any farther with the organisation "to make XYLs and YLs see the light." In case you do not remember, the "light" consists in the utter desirability of the om, having a Ham Station—in the dining room or some such spot—and never going out or having visitors (other than hams) except at odd times when DX is non est and conditions generally punk. Now, who and where is the lad brave enough to be the Secretary?

Jack Coulter, 3MV, whom we just in the last issue landed safely in Hong Kong, drops me a note to say he hopes to attend the November or December W.I.A. meeting in either VK3 or 2. Jack wants an open forum column in Amateur Radio.

To conclude, as I said last month, you have now more time than you all know what to do with, for years you have read YOUR column full of notes provided by "the other chap"—your movements are of more interest now than ever to the hams who hopes to QSO you again soon. So send your notes via your Divisional Sec. or direct to 2YC, 78 Maloney Street, Eastlakes (Mascot), or if passing through Sydney, phone MU 1092.

SHIFTING THE FREQUENCY OF A CRYSTAL.

A coating of finger nail polish thinned down with cuticle remover will lower the frequency of a crystal considerably. Very little if no effect on the strength of oscillation will be noticed.

To shift the frequency higher give one side a few light rubs with a little Bon Ami

TAP ON TANK COILS.

Taps on tank coils can conveniently be made by using a piece of sheet brass ¼ inch wide, looping it round the required turned of wire in the desired position and soldering.

FEDERAL HEADQUARTERS

RESUMPTION. The long awaited day is, we hope, now not so far off. The new regulations are now awaiting signature by the Federal Executive Council in Canberra or wherever they happen to be at the moment. After that it is up to the Government printer to do his bit and break the necessary news in that well-known manual of short-stories, the Government Gazette. When all this has transpired, the P.M.G.'s Department will be all set to collect the smackers from the fraternity. For once we will all be pleased to pay a bill! In the meantime, if anybody has any influence with the Federal Executive Council.

FREQUENCIES. We hear that the people who have the unenviable task of allotting the post-war frequencies have already cleared three of our old bands—2½, 5, and 10 metres. There is some doubt as to whether all of the 10 metre band has been cleared, some say only the portion from 28 to 29 Mc/s, others tell us that all of it is no longer required by the Services. All our information on this subject at the time of going to press is unofficial however. A little blue bird told us that of the seven members of one of the committees, five are Hams, which sounds very promising, except that the fellows concerned refuse to do any promising!

SERVICE HAMS. Since at least one has asked a thousand will want to know the position with regard to licences for those fellows still stationed in ex-battle areas, and likely to be there for some time. One member in New Guinea applied for a licence and was knocked back, as he thought, by the Dept. FHQ was asked to look into the position. We found that the reason behind the refusal was not lack of interest or anything of that nature, but simply that the Dept. has no jurisdiction in territories which are still under military control. A licence therefore cannot be issued by the P.M.G. Any Ham so situated should apply to his CO for permission to operate, and there seems to be no valid reason why in most cases this should not be granted The next question is one of frequencies, but this will, of course, be automatically solved at the time when we are permitted to resume. There remains only the matter of call signs. Naturally any Ham operating in these areas will want to use his own call, and this is where the Dept. does come into the picture. Assuming that permission to operate has been granted, it is then necessary for the Service authorities to apply to the Dept. for the issue of the call sign to the Ham concerned. After that it would seem that all is plain sailing. Don't get the idea that the Dept. has no say from that point onwards, any breaches of operating regulations coming to the notice of the Dept. would be immediately referred to the Service authorities for action against the offender. This has already been done in the case of one or two fellows who have been heard pirating recently in Northern areas. We know that the Yanks have been having the time of their lives in the past few weeks and no doubt many of you in those parts are itching to get going too, but it must be borne in mind that our bands are not yet officially released, and the probability of interference with vital services is very considerable, so the sensible thing to do is to be patient, and do nothing likely to endanger our reputation. In the meantime, see what you can do in the direction of getting the permission referred to above.

HANDBOOK. We are now able to confirm that the price of the new edition of the "Handbook for the Guidance of Operators of Experimental Wireless Stations" will be 1/6. We understand that printing has been held up due to the fact that the Government Printer has an abundance of important work to handle first—as if anything could be more important! When the Handbook does eventually make its apearance we suggest that every licencee and every candidate for the AOCP should regard it as most essential that he have a copy. We will make a further announcement when the Handbook is published, and if any reader is then unable to obtain a copy the Federal Secretary will be pleased to get one for him. Terms—strictly cash with order.

CONVENTION. It is proposed to hold a Federal Convention as soon as possible in the New Year, and the Secretaries of all Divisions have been notified of this intention. The last Federal Convention was held in 1939, which is six years ago, believe it or not,, so we feel that another should be arranged as soon as possible. Among the items which will be listed for consideration is the matter of writing a really up-to-date and comprehensive Federal Constitution to replace the existing one approved by the 1939 Convention.

OVERSEAS. We have, since the writing of last month's notes received comunications from the ARRL and the RSGB. In England things are very much as they at the writing of last notes, while news from the States confirms that they have there been permitted operation on 112 to 115 Mc/s and expected that as from November 15th they would be moved to the new band at 149 Mc/s. No mention was made of other frequencies.

The International Amateur Radio Union will shortly come into operation again and the first post-war edition of the IARU Calendar is expected to be sent out next month. We do not envy the IARU officers their colossal task of reorganising the world wide system of co-operation which existed between Amateur Radio organisations in pre-war days but we do wish them every success in their efforts

RETIRED. Two prominent people in W.I.A. circles, who have decided that the time has come for them to take a well-earned rest and let others take a share of the hard work for a while, are Chas. Quin, VK6CX and A. E. (Peter) Allen, VK7PA. Chas. Quinn was Secretary of the West Australian Division throughout the war and was responsible for keeping the Divisional structure intact there despite the absence of nearly all the members, while Peter Allen as President of the Tasmanian Division did the same job very capably in the Apple Isle. Federal Executive wishes to place on record its appreciation of the good work done by these two in the difficult times through which we have just passed and for their sterling efforts in getting things going again since the conclusion of hostilities.

EXCUSE. If these notes are a little haywire it is most probably due to the arrival of a Junior Op. in the Federal Secretary's menage, not to mention the subsequent celebrations.

RE-SECURING A VALVE ENVELOPE TO ITS BASE.

A loose glass valve envelope can be tightly secured to its base by the following procedure

Use a mixture of 1 tube of secotine to 2 oz. of plaster of Paris. Remove the base of the valve by unsoldering the pin connections, taking care not to lose the code of connections. It may be advisable here to label each wire immediately the base is removed

Re-solder 6 inch leads of bare 24 guage wire to each wire. Clean off all old paste from valve base. Apply the mixture of secotine and plaster, thread wires through pins, pull gently on wires, squeeze base against glass, re-solder connections, then allow the valve to stand on its pins for 24 hours to dry.

DIVISIONAL NOTES

NEW SOUTH WALES

The October General Meeting of the New South Wales Division, postponed owing to elcetricity rationing, was held at Science House on Thursday, 8th November, and it is quite safe to say that that never before have so many Amateurs been present at Institute Meeting.

The Chairman, in declaring the meeting open, apologised for "the lack of standing room," but trusted that all present would gain some pleasure in the knowledge that commencing with January, 1946, General Meeting gatherings would be held in the main hall of Science House, thus ensuring ample seating accommodation for even greater atendances that are expected in the near future. Negotiations had been in progress during the past three months and whilst the Institute had every reason to believe that accommodation would be made available, final confirmation was welcomed.

The fact that, commencing January, 1946, General Meetings are to be held in the Main Hall, will mean a change in the Meeting Night. You are particularly requested to note, particularly older members, that GENERAL MEETINGS WILL BE HELD ON THE FOURTH FRIDAY OF EACH MONTH.

Before we leave the subject of meetings, you are reminded that the December General Meeting will NOT be held. The Annual Dinner has been set down for December 20th. Naturally members will be kept informed by Bulletin of any happenings of importance regarding the lifting of the ban on transmissions, etc.

Getting back to October General Meeting, over 70 members were present, and here are the majority of calls and names:—VR4BA, VK2ZW, 2FX, 2AOH, 2PX, 2VA, 2KS, 2LW, 2JX, 2DA, 2TF, AA-2BQC. 2QM, 2TR, 2NG, 2ACJ, 2AX, 2AKR, 2AHB, 2NO, 2NP, 2HP, 2JN, 2RQ, 2AIK, 2WN, 2AFB, 2NQ, 2DI, 2ADK, 2AJW, 2ADQ, 2WD, 2AHQ, 2TI, 2LO, 2ADV, 2AHU, 2XD, 7RZ, 2ABU, 2AKW, 2ADZ, Messrs. R. & H. Mondel, Blackett, Burton, McIntyre, Borlan, Eyre, Haines, Tracey, Wirsu, Keast, Thane, Wade, Pettrich, Solomon.

Members were given details of the events leading up to the release of sealed containers and the calling for applications for Licences. The chairman, in prasing the work performed by Mr. H. Cox, VK2GU, stated that he regretted very much that he could not give other than brief details of the work done by 2GU, and Amateurs owed it to Mr. Cox and Cox alone, the early release of equipment and the distinct possibility of being on the air much sooner than was expected. Federal Headquarters, dealing in these matters have left much to be desired, and it is suggested that if they are to retain the confidence of the various Divisions, a much more straightforward manner of doing things should be adopted. This refers particularly to the Final Draft Plan and the coverng letter which was ambiguously worded It is difficult to imagine a majority of sane people voting against exempting the holders of first and second class certificates from Class "A". Examination! A demand that the names of the States that allegedly voted that way brought the reply, "Wording of plan gives wrong impression stop Exemption from Class A examination may be granted"

In recognition of 2GU's work it was unanimously decided that he be elerted to Life Membership of the New South Wales Division of the Institute. Others who did good work included Messrs. F. P. Dickson, VK2AFB, Padre Dransfield, VK2ALD, R. Tracey, and W Chapman

Members are reminded that Mr. Bob Fussell, VK2SS, is still an inmate of Parramatta District Hospital, and would very much appreciate a visit or a few lines from any of his many friends. 2SS has been bed-ridden for nearly a year and would enjoy talking "shop" with any ham, even if for only a few minutes. So what say you fellows?

A very hearty welcome home was accorded to Gordon Brigden, VK2ACJ, who had spent sometime as a P.O.W. after being shot down in Burma. Gordon looked very fit and is anxiously awaiting the opportunity to "pound brass" again. By the way, maybe you've heard of Bill Moore, VK2HZ. Well, he was a "guest" of the Nips for quite a while, but recently got fed up and decided to come home—by courtesy of the Atomic Bomb—and was picking up quite nicely at Springwood, and then had to report to R.A.A.F. Medical Rehabilitation Unit, Jervis Bay. Playing tennis, he unfortunately fractured an ankle! What a man! He'd be delighted to hear from any of his many friends and letters should be addressed to Ft. Lt. W. M. Moore, M.R.U., R.A.A.F., Jervis Bay, N.S.W.

A very interesting lecture was delivered by Mr. G. Parker, B.E., B.Sc., VK2AHO, who took for his subject "Panoramic Reception." This proved one of the most interesting talks delivered for some time, and the speaker held the interest of his audience for over an hour, and upon conclusion a very hearty vote of thanks was accorded this brilliant young scientist.

Upon conclusion of General Business, various members gave very interesting talks on their experiences overseas, particularly Engineer Sub-Lieutenant Len Burton, who was wandering round Japan just after the occupation. His "trophy" aroused considerable interest; and many were the questions as to what use he intended to make of it. "R.A.C." Pearce, 2AHB, shed considerable light on what happened to a R.A.A.F. installation at Aleppo, whilst "Grandfather" Ackling was sorry the holiday was over Ken Williams, 2XD gave a brief resume of his experiences in the Middle East, stressing the universality of the Ham spirit. We were very sorry to leave Leo Meyers, 2KS, out of the story-telling, and realised later why he made himself so inconspicuous.

Remember the ANNUAL DINNER will be held at NEW DUNGOWAN, MARTIN PLACE, SYDNEY, on THURSDAY, 20th DECEMBER, and will be a welcome home to P.O.W.'s and Servicemen generally. Further particulars may be obtained by ringing FF 1705.

The Chairman and Council of the Wireless Institute of Australia, New South Wales Division, take this opportunity of wishing all Members and Amateurs a Merry Christmas and a Bright and Prosperous New Year, and it is sincerely hoped that by the time you read this message you will also be able to exchange these selfsame Greetings per medium of Experimental Radio, and if such be the case, remember a toast to VK2GU would be in order

A FINAL REMINDER.—THE ANNUAL DINNER WILL BE HELD AT THE NEW DUNGOWAN, MARTIN PLACE, SYDNEY, ON THURSDAY, 20th DECEMBER. THE JANUARY GENERAL MEETING WILL BE HELD IN THE MAIN HALL, SCIENCE HOUSE, FRIDAY, 25th JANUARY, 1946.

VICTORIA

The November General Meeting was held on Wednesday, 7th November, and over 100 members and visitors were present—a record atendance. Overseas and interstate visitors were Captain T. O. Cadell, VU2EB, ZL4FW, VK2TJ, 2AHE, 4WT, /FL, 5GL, 9RW. Others who signed the attendance book were 3WQ, 3HX, 3KN, 3NY, 3KK, 3JO, 3VX, 3BD, 3SI, 3GO, 3GV, 3VY, 3DG, 3EA, 3GD, 3UJ, 3DA, 3FR, 3QU, 3BJ, 3MX, 3MR, 3DM, 3JT, 3XD, 3UQ, 3NW, 3XS, 3PQ, 3ED, 3LA, 3DL, 3ZO, 3IF, 3RN, 3XJ, 3ML, 3SZ, 3DS, 3LF, 3UC, 3XB, 3SS, 3OC, 3IK, 3QS, 3SQ, 3AP, 3TF, 3TZ, 3ZD, 3VQ, 3XN, 3YL, 3CB, 3WF, 3CF, 3KB, 3IG, 3HK, 3PG, 3LN, 3DH, 3VM, Messrs.

Simmons, Fraser, Belcher, Orchard Smith, McDonald, Arnold, Camp, Lamb, Matthews, Oakes, Herald, Roberts, Greenham, Mansergh, Meallin, Couch, Scott, Chesterfield, Curnow, Hanson, Ridgway.

The President, 3KN, occupied the chair and extended a welcome to all new members, intending members and visitors present. We were also pleased to see Roy Prouse 3XS once again. Roy has recently returned from Malaya where he had been a POW since the fall of Singapore.

The Federal Secretary spoke on the prospects of an early re-issue of licences, and we were advised that the matter of frequencies was still under discussion. The acting Secretary read a letter from VS5JH asking for reports on 14 m.c. transmissions. Address is 2599340, Cpl. Hunt, J. A., c/o BBCAU W/T Station, Labuan Island, Borneo. Frequencies being used are 14240, 14270 and 14280 KC.

Considerable discussion took place on the possibilities of obtaining equipment through the Disposals Commission. A number of those present signified their desire to obtain some Service equipment. 3KN is to report on the position at the next meeting. "Snow" Campbell, 3MR, was then prevailed upon to recount some of his experiences as a POW in Germany ,and told of some of the ways in which the boys amused themselves and also of some of the ways in which receivers were hidden from the guards.

Captain Cadell, VU2EB, again came to our assistance with a demonstration of some portable equipment as used by the British Army. The gear was passed around for inspection and, somewhat surprisingly, returned safely as one of the receivers, complete with batteries, was no larger than an ordinary novel. After a vote of thanks to VU2EB had been carried with acclamation the meeting formally closed at 10 p.m. and the Membership Secretaries were kept busy for some time afterwards, no fewer than 12 new members being enrolled

At the meeting of Council on November 12th, the Magazine Committee reported on the new magazine and were congratulated upon the standard maintained in the November issue.

On the motion of 3NY, seconded by 3XZ, it was decided that all returned POW hams be made honorary members of the Division for the remainder of the financial year.

For some time we have been endeavouring to obtain a supply of badges, and it was decided that further efforts be made, as numerous enquiries are being received, particularly from new members.

VK3WI gear, which had been lodged with the P.M.G.'s Department, has now been returned, and the Laboratory Committee reported on the condition of the gear. It was agreed that the Division should have a transmitter capable of getting on the air as soon as licences were re-issued and the Lab. Committee were instructed to make the necessary arrangements to make the transmitter serviceable

Applications for membership are still being received in increasing numbers. New members admitted include the following.—Messrs. E. B. Ferguson VK3BD, A. F. Taylor VK3AT, E. K. Williamson VK3IF, S. R. Coleston VK3XK, J. A. Hunt VS5JH, R. B. Jones VK3BG, E. Anderson VK3EA, R. Williams XK3ZD, D. C. McDonald, VK3DM, A. R. Whote VK9RW, P. Evans VK3OZ, C. I Falconer VK3CF, A. R. Hearald, D. A. Greenham, W Russell, C. J. Arnold, R Curnow, R. R. McDonald, R. F. Lloyd, K. Hunt and A. Camp.

Members are reminded that the December meeting will be held on Tuesday, December 4th, and to also note that the January meeting will be held on the SECOND Tuesday in January, that is January 8th, 1946.

QUEENSLAND

The attendance at the last general meeting, held on Friday, 6th October, was the largest I have ever seen at a general meeting. The total well exceeded the half centurymark, and taxed the seating accommodation to the limit. The high-spot of the evening was, of course, the address delivered to members by the Chief Radio Inspector, Mr. Conry, in which he gave a general outline of what he believed would constitute our Post-War Amateur Radio. Most of those present were a little disappointed that the promise of an immediate resumption of activity was not forthcoming, but on the whole, members were well pleased with the views expressed by Mr. Conry. Mr. Graham of the R.I.'s Dept. also attended the meeting.

The forms for the application for licence were distributed, and the large gathering then adjourned to listen to a lecture by Mr. Vince Jeffs, 4VJ, the subject being "Receivers." The lecturer dealt most comprehensively with the matter, and it is doubtful if more aspects of receiver design have ever been covered in one lecture.

Several of the "Ipswich Gang" were welcome visitors, and it was unfortunate that the departure of trains, etc., ruled out more chin-wagging. The P.M.G.'s Dept. has, of course, been relieved of most of the gear which it so kindly looked after for us during the war, and no doubt some formidable rigs are taking shape, if only on paper.

It was noted that the views of VK7 towards the F.H.Q. post-war plan were more or less identical to our own.

4FE—All set for a push-button tuning rig, which seems to be an A1 affair from the description of it.

4KS—Keith at present in Sydney, and naturally he will be contacting some of the VK2 hams during his stay.

4EL—Eric has an excellent receiver going, but line noise is R9 most of the time, from line transformers and pole switches. Anyone got a cross-cut saw to lend Eric?

4JU—Believe Frank is chasing the "sprags" off his beam antenna and now has a receiver going on the ham bands

4AP—Came along to the last meeting. Is no doubt dreaming up a new rig for the big day.

4KO—Norm was down on leave from R.A.A.F. Came to meeting with home-town mates, 4AB and 4WS, so the Ipswich Gang will be active again.

4UW—Bernie was in town at the end of last month, but couldn't get along to the meeting.

4PX—Arthur is still in the Army, but the old discharge deosn't seem to be too far distant. Will be "among those present" when the Big Switch is turned on.

4RC—Got the "sealed container" home and found everything in good shape. Like a lot of others, is looking for some good filter condensers.

4ZU—Is at present enjoying a spot of holidays at one of our beach resorts. I bet those new-fangled bathing suits are R9 on the eyes, Howard!

SOUTH AUSTRALIA

The past month has been one of continued expansion of this Division and Council members have had a busy time keeping abreast of developments. At the last Council meeting, 27 full members, 10 Associates and 13 Student members were elected. The total membership to date, after a start from scratch in July is 121.

It has been decided to incorporate the Institute and a sub-committee is hard at work on the drafting of the Constitution

Owing to pressure of work, our Publicity Officer, Mr. H. N. Bowman, has asked for, and been granted, three months' leave of absence. To act in his place, Mr. A. F Wreford (VK5DW) has been co-opted to Council.

The Institute wishes to compile a complete record of the War Service of Amateurs who enlisted in the Forces and also of those who have been engaged in any special war work. A number have already been written to, but the addresses of many are not known. Council, therefore, asks all these Amateurs to write to the Secretary, giving a resume of their activities, together with Unit, Rank, length of service, etc.

Student Classes commenced on 29th October with 18 members. Mr. S. R. Buckerfield (VK5DA) is the Lecturer in Theory, whilst Mr. H. M. Roberts (VK5MY) teaches the code. The students are reported to be a very keen lot, and two trophies have been provided, one for the most improved student in Theory at the end of the course and the other for the most improved in code.

The monthly General Meeting was held on Tuesday, 13th November, when, despite the local transport stoppage, more than 70 attended.

The first was a lecture by Mr. A. C. Smythe, VK5MF, on "Suggestions for the Design, Layout and Construction of an Amateur Station." This is quite a wide subject, and Mr. Smythe covered an amazing amount of ground in the comparatively short time at his disposal, our President remarking at the conclusion that he had never before heard a lecture with so much "meat" in it. The lecture should do much to crystalize the ideas of those engaged or about to engage in the building or rebuilding of a rig—and aren't we all!? The Lecturer advocated relay rack construction with the standard 19 inch panel, a "basic" tapped power transformer with separate rectifiers but common filter, for 300 and 600 volt output, and an 807 band switching exciter with crystal and e.c. oscillator incorporated, which would be capable of driving any type of P.A. tube likely to be used. A triode was suggested for the final stage and a good case made out for cathode modulation which, in effect, is partly grid and partly plate modulation. The beauty of this arrangement seems to be that a moderate sized modulator can be built up of, say, P.P. 6L6's or even 6V6's and the fixed output of this made to modulate any final power input by suitable adjustment of the radio grid modulation to plate modulation. One thus has an exciter and modulator adaptable to any final stage.

After the lecture the old 5WI gear was auctioned and a total clearance effected, the bidding being keen and spirited.

General business was then attended to and various suggestions discussed and adopted, including a Suggestion Box and the providing of plaques or badges as a means of identification for members to wear at meetings. A Technical Committee to deal with members' problems is to be formed, also a Roll and Attendance Book is to be kept at meetings.

It was announced that Mr. R. A. Bruce, VK5BJ, had offered a trophy, leaving the Institute to decide its application.

Among those present at the meeting and recently discharged from the Forces were Lionel Badenoch, VK5LB, Merv. Brown VK5MB, Clarrie Castle VK5KL, Reg Galle VK5QR, M. Richards, VK5WR, "Ossie" Richardson, VK5YK, T. Welling, VK5TW, and Doug. Whitburn, VK5BY.

The Christmas Meeting is to take the form of a Social, and will be held at the Bohemia Cafe on Tuesday, 11th December.

TASMANIA

The monthly gathering ran to schedule on the evening of November 7, at the rooms over 92 Liverpool Street. (No free advt.).

The attendance was very pleasing, many new faces being evident.

As has been the policy to date, a brief Council meeting preceeded the general meeting, and those present were 7AH, 7AR, 7BJ, 7CJ, 7CL, 7CT, 7CW, 7GJ, 7HM, 7LJ in chair, 7MK, 7ML, 7PJ, 7RY, 6AR, A. Morrisby and F. Gee, 3LL council only. Apologies, 3LL, who left after council meeting, 7AM, 7BC, and 7PA.

This meeting was summoned as a special general meeting, the business being: (1) To verify the action of the Institute, and the mode of election of officers which, under the extraordinary circumstances involved in getting started again, were not in strict accordance with the normal routine of the Articles.

These actions were unanimously confirmed.

(2) To elect two country members to the Council; 7CK was elected for N.W. coast and 7AM for Launceston.

It is hoped that the Launceston gang will stage a get-together at their earliest and endeavour to swing into stride as before the war, and further, that a branch might be possible at Burnie also.

The general business of the meeting being disposed of the meeting closed, and then the true ham spirit predominated, a general discussion on xtal oscillators and xmitters was indulged in and all went their way at the conclusion feeling pleased in the knowledge that they belong to a fraternity such as we have in the Ham organisation of W.I.A.

Little is known of the individual at present, but some have commenced their preliminaries, I believe, and application forms have been completed and returned to the Dept. in many cases in anticipation of an early start.

The final regulations and restrictions are awaited with interest.

Meeting night for December will be Wednesday, 4th at 7.30 p.m. Council, 8 p.m. General, with an open invitation to all interested to attend.

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PARALLEL "R" AND SERIES "C" ON THE SLIDE RULE

Users of the ordinary 4 scale type of slide rule (i.e., without the reciprocal scale) will no doubt be interested in the following facts which are not generally known—to find the reciprocal of any number all that is necessary is to reverse the slider and close up rule fully. Reciprocals of numbers appearing on scale "A" may now be read direct on scale "B" (now upside down). By leaving slider in this position it is now possible to calculate any combination of resistors in parallel—or condensers in series without further movement of slider; the cursor only is required. For, say, three resistors in parallel, proceed as follows: set cursor to value of R1 on scale "A" and note corresponding number on scale "B"; repeat for R2 and R3 and add total of numbers on scale "B". Reset cursor to this total on scale "B" and the absolute resistan ecvalue appears opposite in scale "A."

After a little practice this will be found to be a much quicker method of calculation than the old formula, and It reduces the operation to one of simple addition. This system may, of course, be used with equal ease for calculating the total capacity of any number of condensers in series, and the procedure is the same.

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Meeting Night—Last Friday of each month.
Secretary's Address—"Mouquet," Eildon Road, Windsor, N.3. Phone: M 2144.

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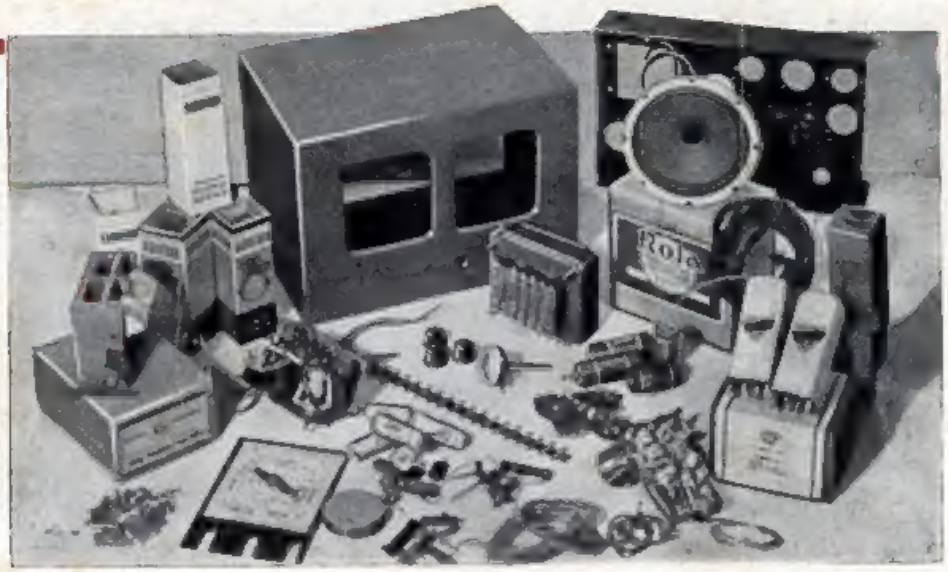

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